

### **Remarks/Arguments**

This amendment is being filed in response to the Office action mailed March 20, 2006. Reexamination and reconsideration of the application, as amended, and in view of the remarks herein are respectfully requested.

### **Amendments to the Specification and Abstract**

The specification and abstract have been objected to as including minor informalities. The specification and abstract have been amended as requested by the Examiner. No new matter has been added. Withdrawal of the objections to the specification and abstract in view of these amendments is respectfully requested.

### **Claim Amendments**

Independent claims 1, 22, 40, 50 and 51 have been amended to more particularly point out that the claimed “continuing rotation” occurs for a “non-fixed time period.” Dependent claims 2 and 48 have been amended to correct typographical errors. No new matter has been added.

### **35 U.S.C. §102**

Claims 22 and 25-30 have been rejected under 35 U.S.C. §102(b) as being anticipated by Shieh (U.S. Patent No. 6,384,956). Applicants respectfully traverse this rejection.

Shieh is an example of a prior art configuration suffering from loss of control issues the claimed invention overcomes. In particular, Shieh teaches a controller architecture including an arrangement of waveplates arranged in a serial fashion. Col. 3, lines 5-7, Fig. 1. The waveplates are adjusted sequentially in “prefixed” time slots. Col. 8, line 19; Col. 3, lines 59-61. The prefixed time slots may be mutually exclusive or overlapping. Col. 8, lines 20-23; Col. 3, line 65 to Col. 4, line 1.

The specification, at paragraph [0011] discusses the deficiencies of an arrangement using fixed time slots such as that disclosed in Shieh:

[0011] Specifically, a HWP is sandwiched between a pair of QWPs. The conventional approach is to dither the rotational angle of each waveplate as

graphically illustrated in FIG. 3. The angle of the waveplate is dithered/adjusted by a small step-size ( $\Delta\alpha$ ,  $\Delta\beta$ , or  $\Delta\gamma$ ) in sequence. More specifically, the angle  $\alpha$  of the first waveplate is dithered/adjusted (e.g., by mechanically rotating the waveplate) for a fixed time period, then the angle  $\beta$  of the second waveplate is dithered/adjusted for a fixed time period, and finally the angle  $\gamma$  of the third waveplate is dithered/adjusted for a fixed time period. Thus, each waveplate is independently dithered and adjusted for a fixed amount of time. Unfortunately, this approach may not have a sufficient control speed to handle fluctuations in the input SOP. This can result in a loss control problem. (emphasis added).

To address the problem of loss of control, the claimed invention involves rotating a waveplate for a non-fixed time period until rotation becomes ineffective in controlling the output polarization. This is specifically discussed at paragraph [0039] of the specification:

[0039] It has been discovered that it is possible to remove the LC effects by continuing to dither the orientations of selected waveplates while bypassing or cutting short the dithering of other waveplates. For the first LC effect, rather than increase the dither step-size of a waveplate that has no response, it is preferable to remain with a "good" waveplate as long as possible. A "good" waveplate is one that can be employed to change the SOP and/or produce a beneficial response. If there is at least one other waveplate that has a desired response, then it becomes possible to switch to this "good" waveplate, decide a correct rotation direction and keep rotating this waveplate while monitoring the feedback signal. (emphasis added).

Amended independent claim 22 clearly recites that the "continuing rotation" occurs for a "non-fixed time period." Applicants find nothing in Shieh that teaches or suggests, adjusting waveplate rotation for a "non-fixed time period", as required by all of the independent claims. On the contrary, Shieh teaches away from the claimed invention in requiring "prefixed" time slots for adjustment, and thus represents an example of the prior art configuration suffering from loss of control issues the claimed invention is intended to remedy.

In view of the fact that the Shieh fails to teach or suggest essential limitations of independent claim 22 requiring "continuing rotation" for a "non-fixed time period", Applicants respectfully submit that claim 22 is not anticipated by Shieh. Dependent claims 25-30 are also not anticipated by Shieh by virtue of the dependency from claim 22, as well as for their own limitations. Applicants respectfully request, therefore, that the rejection of claims 22 and 25-30

under 35 U.S.C. §102(b) as being anticipated by Shieh (U.S. Patent No. 6,384,956) be withdrawn upon reconsideration.

35 U.S.C. §103

Claims 1-4, 17, 20, 40-48 and 50-51 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shieh in view of Heismann (F. Heismann, *Analysis of a Reset-Free Polarization Controller for Fast Automatic Polarization Stabilization in Fiber-optic Transmission Systems*, Journal of Lightwave Technology, Vol. 12, No. 4, April 1994). Applicants respectfully traverse this rejection.

Independent claims 1, 40, 50 and 51 clearly recite that the claimed “continuing rotation” occurs for a “non-fixed time period.” As discussed above, this feature is neither disclosed nor suggested by Shieh. Heismann does not provide the missing teaching, and has not been cited has such. In fact, Heismann is specifically discussed in the background section as an example of a prior art configuration using “fixed” time periods, and is the subject of paragraph [0011] which is reproduced above. See ¶ [0010], lines 14-24.

Since neither Shieh nor Heismann, nor their combination, teaches or suggests limitations of independent claims 1, 40, 50 and 51 requiring “continuing rotation” for a “non-fixed time period”, Applicants respectfully submit that claims 1, 40, 50 and 51 could not have been obvious in view of Shieh combined with Heismann at the time the invention was made. Claims 2-4, 17, 20, and 41-48 depend from claims 1 or 40 and are also cannot be considered obvious in view of Shieh combined with Heismann by virtue of the dependency, as well as for their own limitations. Applicants respectfully request, therefore, that the rejection of claims 1-4, 17, 20, 40-48 and 50-51 under 35 U.S.C. § 103(a) as being unpatentable over Shieh in view of Heismann be withdrawn upon reconsideration.

In paragraphs 10-17 of the Official Action, claims 5-7, 8-13 and 18, 14-16, 19 and 21, 23-24, 31-34, 35-37, 38-39, and 49 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Shieh, either alone or in combination with Heismann. All of these claims depend from independent claims 1, 22 or 40, and are therefore allowable by virtue of their dependency for the reasons adduced above, as well as for their own limitations. Again, neither

Shieh nor Heismann, nor their combination teaches or suggests limitations of independent claims 1, 22 and 40 requiring “continuing rotation” for a “non-fixed time period.” Applicants respectfully request, therefore, that the rejections of claims 5-7, 8-13 and 18, 14-16, 19 and 21, 23-24, 31-34, 35-37, 38-39, and 49 under 35 U.S.C. § 103(a) as being unpatentable over Shieh, either alone or in combination with Heismann, as set forth in sections 10-17 of the Official Action, be withdrawn upon reconsideration.

Having overcome all of the outstanding rejections, it is respectfully submitted that the application is now in condition for allowance. Early and favorable action is respectfully solicited.

In the event that there are any fee deficiencies, or additional fees are payable, please charge, or credit any overpayment to, our Deposit Account No. 50-2121.

RESPECTFULLY SUBMITTED,

/Donald J. Perreault/

Donald J. Perreault, Reg. # 40,126  
Attorney for Applicants  
Grossman, Tucker, Perreault & Pfleger, PLLC  
55 South Commercial Street  
Manchester, NH 03101  
Phone: (603)668-6560; Fax: (603)668-2970